FLEXIBLE *HP*- DISCONTINUOUS GALERKIN METHODS

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We define a new class of flexible discontinuous Galerkin finite element methods that allow for nonuniform degree and continuity level across element boundaries. This new method maintains many of the positive aspects of the discontinuous Galerkin methods while attempting to reduce computational cost. Additionally, this method can be viewed as a so called coupled method as in [3] which does not require a separate transition process. We illustrate our flexible Galerkin method on a linear two-dimensional hyperbolic problem showing data structures, numerical rates of convergence and present a computational cost analysis. We use our flexible Galerkin method to illustrate the effectiveness of our new *a posteriori* error estimates developed in [1] for a fully discontinuous Galerkin formulation of two-dimensional hyperbolic problems.

References

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